# FIG. 1A

atg Met 1	tac Tyr	aac Asn	gly ggg	tcg Ser 5	tgc Cys	tgc Cys	cgc Arg	atc Ile	gag Glu 10	Gly 999	gac Asp	acc Thr	atc Ile	tcc Ser 15	cag Gln	48
gtg Val	atg Met	ccg Pro	ccg Pro 20	ctg Leu	ctc Leu	att Ile	gtg Val	gcc Ala 25	ttt Phe	gtg Val	ctg Leu	ggc Gly	gca Ala 30	cta Leu	ggc Gly	96
aat Asn	gly aaa	gtc Val 35	gcc Ala	ctg Leu	tgt Cys	ggt Gly	ttc Phe 40	tgc Cys	ttc Phe	cac His	atg Met	aag Lys 45	acc Thr	tgg Trp	aag Lys	144
ccc Pro	agc Ser 50	act Thr	gtt Val	tac Tyr	ctt Leu	ttc Phe 55	aat Asn	ttg Leu	gcc Ala	gtg Val	gct Ala 60	gat Asp	ttc Phe	ctc Leu	ctt Leu	192
atg Met 65	atc Ile	tgc Cys	ctg Leu	cct Pro	ttt Phe 70	cgg Arg	aca Thr	gac Asp	tat Tyr	tac Tyr 75	ctc Leu	aga Arg	cgt Arg	aga Arg	cac His 80	240
tgg Trp	gct Ala	ttt Phe	ggg Gly	gac Asp 85	att Ile	ccc Pro	tgc Cys	cga Arg	gtg Val 90	gly ggg	ctc Leu	ttc Phe	acg Thr	ttg Leu 95	gcc Ala	288
atg Met	aac Asn	agg Arg	gcc Ala 100	gly aaa	agc Ser	atc Ile	gtg Val	ttc Phe 105	ctt Leu	acg Thr	gtg Val	gtg Val	gct Ala 110	gcg Ala	gac Asp	336
agg Arg	tat Tyr	ttc Phe 115	aaa Lys	gtg Val	gtc Val	cac His	ccc Pro 120	cac His	cac His	gcg Ala	gtg Val	aac Asn 125	act Thr	atc Ile	tcc Ser	384
acc Thr	cgg Arg 130	gtg Val	gcg Ala	gct Ala	ggc Gly	atc Ile 135	gtc Val	tgc Cys	acc Thr	ctg Leu	tgg Trp 140	gcc Ala	ctg Leu	gtc Val	atc Ile	432
ctg Leu 145	gga Gly	aca Thr	gtg Val	tat Tyr	ctt Leu 150	ttg Leu	ctg Leu	gag Glu	aac Asn	cat His 155	ctc Leu	tgc Cys	gtg Val	caa Gln	gag Glu 160	480
			tcc Ser													528
cat His	gac Asp	atc Ile	atg Met 180	ttc Phe	cag Gln	ctg Leu	gag Glu	ttc Phe 185	ttt Phe	atg Met	ccc Pro	ctc Leu	ggc Gly 190	atc Ile	atc Ile	576
			tcc Ser													624

### FIG. 1B

ctg Leu	gcc Ala 210	aga Arg	cag Gln	gct Ala	cgg Arg	atg Met 215	aag Lys	aag Lys	gcg Ala	acc Thr	cgg Arg 220	ttc Phe	atc Ile	atg Met	gtg Val	672
gtg Val 225	gca Ala	att Ile	gtg Val	ttc Phe	atc Ile 230	aca Thr	tgc Cys	tac Tyr	ctg Leu	ccc Pro 235	agc Ser	gtg Val	tct Ser	gct Ala	aga Arg 240	720
ctc Leu	tat Tyr	ttc Phe	ctc Leu	tgg Trp 245	acg Thr	gtg Val	ccc Pro	tcg Ser	agt Ser 250	gcc Ala	tgc Cys	gat Asp	ccc Pro	tct Ser 255	gtc Val	768
cat His	gly ggg	gcc Ala	ctg Leu 260	cac His	ata Ile	acc Thr	ctc Leu	agc Ser 265	ttc Phe	acc Thr	tac Tyr	atg Met	aac Asn 270	agc Ser	atg Met	816
ctg Leu	gat Asp	ccc Pro 275	ctg Leu	gtg Val	tat Tyr	tat Tyr	ttt Phe 280	tca Ser	agc Ser	ccc Pro	tcc Ser	ttt Phe 285	ccc Pro	aaa Lys	ttc Phe	864
tac Tyr	aac Asn 290	aag Lys	ctc Leu	aaa Lys	atc Ile	tgc Cys 295	agt Ser	ctg Leu	aaa Lys	ccc Pro	aag Lys 300	cag Gln	cca Pro	gga Gly	cac His	912
tca Ser 305	aaa Lys	aca Thr	caa Gln	agg Arg	ccg Pro 310	gaa Glu	gag Glu	atg Met	cca Pro	att Ile 315	tcg Ser	aac Asn	ctc Leu	ggt Gly	cgc Arg 320	960
agg Arg	agt Ser	tgc Cys	atc Ile	agt Ser 325	gtg Val	gca Ala	aat Asn	agt Ser	ttc Phe 330	caa Gln	agc Ser	cag Gln	tct Ser	gat Asp 335	ggg ggg	1008
				cac His												1038

# FIG. 2A

gaaa	aaga	ca a	aaacc	agaa	ıa aa	gaaa	agto	ato	tcca	raaa	ctcg	gatct	ag o	caacg	agtct	60
gtag	gcatg	ŗta t	agco	gtcgg	ga co	cccg	agct	gca	acco	aga	aatg	gtaca	ict (	gtgg	gaaac	120
cgct	tgca	icc (	ccaga	ıgcct	g ac	ccag	ctgo	agg	gatta	aac	tctg	gtagg	199 a	acgto	ıcagct	180
cgt	gatco	aa g	gccta	aggag	ja aa	ıggac	ttgo	tgo	cggc	ttt	catt	tcct	gg (	ctgaa	igtttc	240
tcto	gtgg	ıgt g	gcago	gcct	g ca	itccc	aggg	g tga	atgag	gtt	aggg	gccc	cag (	ctgct	agagg	300
agco	ctag	jtg 1	tegg	gatag	gg ca	igctg	jtgco	c tct	gtgo	cgg	ccac	cctt			a gtc o Val	358
														gag Glu		406
gag Glu 20	ccc Pro	atc Ile	tcc Ser	cag Gln	gtg Val 25	atg Met	cct Pro	cct Pro	cta Leu	ctc Leu 30	atc Ile	ctg Leu	gtc Val	ttc Phe	gtg Val 35	454
ctt Leu	ggc Gly	gcc Ala	ctg Leu	ggc Gly 40	aac Asn	ggc Gly	ata Ile	gcc Ala	ctg Leu 45	tgc Cys	ggc Gly	ttc Phe	tgc Cys	ttt Phe 50	cac His	502
atg Met	aag Lys	acc Thr	tgg Trp 55	aag Lys	tca Ser	agc Ser	act Thr	att Ile 60	tac Tyr	ctt Leu	ttc Phe	aac Asn	ttg Leu 65	gct Ala	gtg Val	550
														tac Tyr		598
														ctg Leu		646
ctc Leu 100	ttc Phe	aag Lys	ctg Leu	gcc Ala	atg Met 105	aat Asn	agg Arg	gcc Ala	ggg Gly	agc Ser 110	att Ile	gtc Val	ttc Phe	ctc Leu	act Thr 115	694
														cat His 130		742
														gtc Val		790
			Val											agt Ser		838

### FIG. 2B

ctg Leu	tgt Cys 165	gtg Val	cag Gln	Gly ggg	aca Thr	ctg Leu 170	tcg Ser	tcc Ser	tgt Cys	gag Glu	agc Ser 175	ttc Phe	atc Ile	atg Met	gag Glu	886
tca Ser 180	gcc Ala	aac Asn	gly ggg	tgg Trp	cac His 185	gat Asp	gtc Val	atg Met	ttc Phe	cag Gln 190	ctg Leu	gag Glu	ttc Phe	ttc Phe	ctg Leu 195	934
	ctg Leu															982
aga Arg	cgg Arg	agg Arg	cag Gln 215	cag Gln	ctg Leu	acc Thr	aga Arg	cag Gln 220	gct Ala	cgg Arg	atg Met	agg Arg	agg Arg 225	gcc Ala	acc Thr	1030
cgg Arg	ttc Phe	atc Ile 230	atg Met	gtg Val	gtg Val	gct Ala	tct Ser 235	gtg Val	ttc Phe	atc Ile	acg Thr	tgt Cys 240	tac Tyr	ctg Leu	ccc Pro	1078
agc Ser	gtg Val 245	ctg Leu	gct Ala	agg Arg	ctc Leu	tac Tyr 250	ttc Phe	ctc Leu	tgg Trp	acg Thr	gtg Val 255	ccc Pro	act Thr	agt Ser	gcc Ala	1126
tgt Cys 260	gac Asp	ccc Pro	tct Ser	gtc Val	cac His 265	aca Thr	gcc Ala	ctc Leu	cac His	gtc Val 270	acc Thr	ctg Leu	agc Ser	ttc Phe	acc Thr 275	1174
tac Tyr	ctg Leu	aac Asn	agt Ser	atg Met 280	ctg Leu	gat Asp	ccc Pro	ctt Leu	gta Val 285	tat Tyr	tac Tyr	ttc Phe	tca Ser	agc Ser 290	ccc Pro	1222
tcg Ser	ctc Leu	ccc Pro	aaa Lys 295	ttc Phe	tac Tyr	gcc Ala	aag Lys	ctc Leu 300	aca Thr	atc Ile	tgc Cys	agc Ser	ctg Leu 305	aag Lys	ccc Pro	1270
															att Ile	1318
															cag Gln	1366
	cca Pro										Cys		atgc	cat		1412
taa	gaca	aac	agcc	caac	aa c	gagg	caga	g aa	atgg	gcaa	tgt	gagt	taa	atct	gaaggg	1472
tgg	agga	ctt	gaag	atgt	cc c	ctcc	cact	c tt	agct	gtat	ctt	tctc	act	cagg	tagaaa	1532
tgg	gatc	cac	cctg	cttg	ac c	tttt	ccag	a ag	gttc	caaa	ccg	gttg	gtt	gtgt	ttaaat	1592

# FIG. 2C

actctgatag	caatggtgaa	ggggcagcgt	gtgagtgtga	aggaaaccgt	gggtgtcggg	1652
ttaggaacta	cctggagccc	gtgtcgcttt	gcatggctga	gaaaagcggt	atgagcctgg	1712
ctgggtcttg	ttctagctcg	gagagagtta	acgatctcaa	taactcgtcg	gtatttcctg	1772
gactgaaaaa	aatagaaact	gcactgagtc	aatacactta	tttccagctg	agcgagaccc	1832
tttactgcag	gacacccgga	cctagccgtt	tttttaaatc	ttccctgggg	agcctccaca	1892
catttcaagg	tttgaacatc	caggtggccc	aggagggcag	caaaaagaat	ctattctaac	1952
cttgctggcg	ccacgatatt	ttgctgattt	taagtggttt	catcctttgt	ttttcttttg	2012
tttgcatttc	aaagaagatg	ctgagggact	tgtccacctg	atatcagcta	tcgtttctcc	2072
agtgggaact	gagagcctgt	ttacggcagc	aatggtgggg	ggggggtgct	tcctggtatt	2132
tgggatgggt	taattcaagc	atggttgttc	ttcactgctt	aatgcatgaa	tttgagctga	2192
aatcctccct	tctcaagtct	ttgtttaatc	cacagtatgt	tgtcccaccc	tgtccagcat	2252
cctcgtctgt	tttgtctttg	gtgctgggca	ttgaacttgg	gaccttattc	gagccaggca	2312
agcactgacc	actgaactgc	actcccaaac	cccttgtgcc	ccttttagct	gtagcgttgt	2372
tagccaactt	ttgggagaaa	gcaaagcact	agaggtggca	gcaacagttt	agctcaatgt	2432
cctttcgtca	gtgtctagac	ttctggtcag	ccatccgggt	ctcctattgg	gggcctccct	2492
caagcacata	tgttctccca	aatactaccc	agaattctca	cagctaggtg	attctgtgaa	2552
agtccaggct	gcccctgtcc	tggagaagga	gaaatagaat	ccgtgttaac	cttagtccca	2612
ctttcaagcc	acaaaagtgg	tgacagccat	tcactctctc	cagttcccag	ggtactctcc	2672
ccagggaagg	gaccttgaca	tttatgtcta	aagacataaa	ttagatgctc	ctcaaggttg	2732
tccctgtggc	ttcctttgcc	agaggtgttg	aagcctaggt	gcgaaaatca	gtctgactgc	2792
agggctggtg	agaaggctca	gtaggtaaac	aggtctgccg	ccaagccacc	aacctgagta	2852
tccctgagac	ccacgtggta	ggagaacacc	aaatcccaaa	ggtggttctg	tcctccacct	2912
atgttcacgc	atgcgcacat	gcacgcatgc	gcacgcgcgc	acacccaccc	accaaataca	2972
ttaatgcaat	aaaaatttta	ttggctacac	ggtcaagttt	gaatcttagt	ttaaatgctt	3032
attagacatg	tgctcgtagg	gaagacttta	tttaacccca	ctcagttttg	atgttcagca	3092
gggttaatac	tgatgccaaa	gggtttggga	gcaaattcaa	tgactgtaca	ctcataagca	3152
tgagaaatct	gttgttccca	ggtctgcccg	gaagaagacc	atgtgcgtgt	agtagttgat	3212

# FIG. 3A

tggt	acgo	cct ç	gcago	gtaco	cg gt	ccgg	gaatt	ccc	egggt	cga	CCC	acgcg	gtc o	cgcaa	aacta	60
gaaa	agca	aaa a	atcgt	cccc	ca gg	ggtg	ggaco	cag	gcgad	caag	tcts	gctgo	gt g	ggcts	ggcatc	120
agad	cccc	caa g	gctgo	cagco	ct gg	gcaat	gtac	gct	tttg	ggaa	aact	gcto	ctc g	gaata	cagagc	180
ctga	accca	agc t	gcag	ggctt	c ac	cctct	gtag	9 999	gacat	gca	gctt	gtga	atc o	caggo	ctgagg	240
agaa	agga	acc t	gct	gtcgg	gc tt	tcat	ttcc	tga	actga	aagt	tggg	gtgat	ga g	ggtta	aggggc	300
ccag	gctgo	cca a	agggg	gaaco	ca ta	agtgt	tcaç	g ata	aggca	agct	gtg	cctt	gt g	gtcas	gccacc	360
tagg	Met				ı Sei						) Ası				tgt Cys 15	409
							acc Thr									457
							ctg Leu									505
							tgg Trp 55									553
							ctc Leu									601
							agg Arg									649
							ctg Leu									697
							gtg Val									745
							atc Ile 135									793
							gtc Val									841

### FIG. 3B

atg Met 160	gag Glu	agt Ser	cac His	ctg Leu	tgt Cys 165	gtg Val	cgg Arg	Gly 999	atg Met	gtg Val 170	tca Ser	tct Ser	tgt Cys	gag Glu	agc Ser 175	889
ttc Phe	atc Ile	atg Met	gag Glu	tca Ser 180	gcc Ala	aac Asn	Gly 999	tgg Trp	cac His 185	gat Asp	atc Ile	atg Met	ttc Phe	cag Gln 190	ctg Leu	937
														aaa Lys		985
														cgg Arg		1033
														atc Ile		1081
tgt Cys 240	tac Tyr	ctg Leu	ccc Pro	agc Ser	gtg Val 245	ttg Leu	gcg Ala	agg Arg	ctc Leu	tac Tyr 250	ttc Phe	ctc Leu	tgg Trp	acg Thr	gtg Val 255	1129
ccc Pro	tcc Ser	agt Ser	gct Ala	tgt Cys 260	gac Asp	ccc Pro	tct Ser	gtc Val	cac His 265	ata Ile	gct Ala	ctc Leu	cat His	gtc Val 270	acc Thr	1177
														tac Tyr		1225
														atc Ile		1273
														tcg Ser		1321
														gtg Val		1369
aat Asn	agt Ser	tcc Ser	cag Gln	agg Arg 340	ccg Pro	tct Ser	gac Asp	GJA aaa	cag Gln 345	tgg Trp	ggt Gly	ctc Leu	caa Gln	gtg Val 350	Cys	1417
tga	atgc	cat	gaag	acaa	at g	gccc	agca	g ca	aagc	agag	acc	tggg	caa	ctgt	gagtta	1477
aat	ctga	agg	gtga	ggga	ct t	gaaa	aatg	a ca	gccc	cccc	CCC	ccgc	cca	cccg	cccgcc	1537
cgc	cccg	ctc	tttc	tcag	ct g	tgtc	tttc	t ca	ctca	agta	gaa	gcaa	aat	ctaa	aaaaaa	1597

### FIG. 3C

aaaaaaaaa	aaaaaaaaa	agggcggccg	ctctagagga	tccaagctta	cgtacgcgtg	1627
catgcgacgt	С					1668

# FIG. 4

		TM1
ber GDGD	1	MYNGSCCRIEGDTISQVMPPLLIVAFVLGALGNGVALCGFCF 42
hu_GPCR	1	MPVLSPTAMDNGSCCLIEGEPISQVMPPLLILVFVLGALGNGIALCGFCF 50
mu_GPCR ra GPCR		MLFLSPSAMDNGSCCLIEGEPITQVMPPLLILAFLLGALGNGLALCGFCF 50
Ia_GPCR	_	* **** *** *. *. ******* *. *. ********
		TM2 extracellular loop 1
hu GPCR	43	HMKTWKPSTVYLFNLAVADFLLMICLPFRTDYYLRRRHWAFGDIPCRVGL 92
mu GPCR		HMKTWKSSTIYLFNLAVADFLLMICLPLRTDYYLRRRHWIFGDIACRLVL 100
ra GPCR		HMKTWKSSTIYLFNLAVADFLLMICLPLRTDYYLRRRHWILGDIPCRLVL 100
		***** ** ********** *** *** *** *** ***
		TM3 TM4
hu GPCR		FTLAMNRAGSIVFLTVVAADRYFKVVHPHHAVNTISTRVAAGIVCTLWAL 142
mu GPCR		FKLAMNRAGSIVFLTVVAVDRYFKVVHPHHMVNAISNRTAAATACVLWTL 150
ra_GPCR	101	FMLAMNRAGSIVFLTVVAVDRYFKVVHPHHMVNAISNRTAAAIVCVLWTL 150
<del></del>		* ******* * ***** * * * * * * * * * * *
		extracellular loop 2 TM5
hu_GPCR		VILGTVYLLLENHLCVQETAVSCESFIMESANGWHDIMFQLEFFMPLGII 192
mu_GPCR		VILGTVYLLMESHLCVQGTLSSCESFIMESANGWHDVMFQLEFFLPLTII 200
ra_GPCR	151	VILGTVYLLMESHLCVRGMVSSCESFIMESANGWHDIMFQLEFFLPLTII 200
		**********************
		TM6
CDCD	100	LFCSFKIVWSLRRRQQLARQARMKKATRFIMVVAIVFITCYLPSVSARLY 242
hu_GPCR		LFCSVNVVWSLRRRQQLTRQARMRRATRFIMVVASVFITCYLPSVLARLY 250
mu_GPCR		LFCSFKVVWSLRQRQQLTRQARMRRATRFIMVVASVFITCYLPSVLARLY 250
ra_GPCR	201	****
		extracellular
		loop 3 TM7
hu GPCR	243	FLWTVPSSACDPSVHGALHITLSFTYMNSMLDPLVYYFSSPSFPKFYNKL 292
mu GPCR		FLWTVPTSACDPSVHTALHVTLSFTYLNSMLDPLVYYFSSPSLPKFYAKL 300
ra GPCR		FLWTVPSSACDPSVHIALHVTLSLTYLNSMLDPLVYYFSSPSFPKFYAKL 300
_		****** ****** *** *** ** ********* *** **
		2.40
hu_GPCR		KICSLKPKQPGHSKTQRPEEMPISNLGRRSCISVANSFQSQSDGQWDPHI 342
mu_GPCR		TICSLKPKRPGRTKTRRSEEMPISNLCSKSSIDGANRSQRPSDGQWDLQV 350
ra_GPCR	301	KIRSLKPRRPGRSQARRSEEMPISNLCRKSSTDVVNSSQRPSDGQWGLQV 350
		* ******* ******* .*. * * *****
hu GPCR	343	VEWH 346
mu GPCR		
	351	C 351
ra GPCR	351 351	



